REMARKS

1. The Specification

Applicants have provided herein a replacement Abstract to address the Examiner's concerns that the Abstract appeared too long and contained claim language. The Applicants have also submitted a replacement paragraph for page 4 of the Specification to address the Examiner's request for correction regarding the Specification making reference to the claims on page 4. Lastly, Applicants have amended the Specification at page 8, lines 30-31, and at page 10, lines 12 and 19, to provide further clarification.

2. Status of the Claims

Claims 1-3, 6, 8, 10, 12, 21-23, 25, 27-28, and 30-31, as herein amended, and claims 32-34, as filed, are pending in the Application (Applicants have herein cancelled claims 4-5, 7, 9, 11, 13-20, 24, 26, 29, and 35). Applicants believe that the objections and rejections contained in the Office Action have been overcome as discussed below.

3. The Claim Objections Have Been Overcome

The Examiner objected to claim 2 as being of improper dependent form for failing to further limit the subject matter of a previous claim. The Examiner also objected to claim 1 because it "appear[ed] that the term 'valve' should be value." Applicants have amended claims 1 and 2 and respectfully request that the Examiner withdraw these objections.

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4. The Term "Disposable" in Claims 10 and 11

Unless required to by the Examiner, Applicants will not address the merits of the Examiner's statements regarding the term "disposable" in claims 10 and 11 (which is cancelled herein), which are not conceded and with which Applicants respectfully disagree.

5. Claims 21-30 and 34-35 Are Not Indefinite

Claims 21-30 and 34-35 stand rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the invention. Applicants have amended claim 21 to recite positive method steps and respectfully request that the Examiner withdraw these rejections. Applicants also note that claims 24 and 35 are cancelled herein.

6. Claims 1-7, 21-28, and 31 Are Not Anticipated by Mogensen

The Examiner rejected claims 1-7, 21-28, and 31 under 35 U.S.C. § 102(e) as being anticipated by Mogensen US2003/0149505. Applicants respectfully traverse the rejections and request favorable reconsideration. In contrast to Mogensen, Applicants' claimed microejection device solely defines and dispenses the sample volumes. Thus, Applicants' claimed embodiments provide economical and simple systems, methods, and products that enable highly reproducible separation of liquid volumes without carrying out pressure measurement in the tubing that supplies the microejection device with liquid.

In particular, Applicants' claims 1 and 31 include the recitations "to actively define sample volumes . . . using only the microejection device"; "dispense the sample volumes . . . using only the microejection device"; and "actively dispensed only by the microejection device." Similarly, claim 21 includes the recitations "actively defining sample

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volumes . . . using only the microejection device"; dispensing the sample volumes . . . using only the microejection device"; and "actively dispensed only by the microejection device."

Applicants' claims 1, 21, and 31 thus recite embodiments in which only the microejection device defines and dispenses sample volumes. As also claimed in claims 1, 21, and 31, Applicants' embodiments "track the piston of the pump that conveys liquid about a tracking volume that is dependent on the sample volume." As recited in each independent claim 1, 21, and 31, the "tracking volume may deviate from the sample volume by an amount comprising a residual volume."

As claimed, the tracking volume can be described by reference to the sample volume and the residual volume. As claimed and as disclosed in the specification, the sample volume is defined only by the microejection device (*see, e.g.*, page 5, line 31 to page 6, line 1 and page 8, lines 10-23 of the Specification), which dispenses one or more droplets of sample liquid (*see, e.g.*, page 9, lines 12-14 and page 12, lines 22-24 of the Specification). The sample volume can thus be the product of drop volume and drop number (*see, e.g.*, page 12, lines 22-28 and the two tables on pages 12 and 13 of the Specification).

Active displacement of liquid from the microejection device causes a slight drop in pressure in the tubing supplying the microejection device with liquid (*see, e.g.*, page 8, lines 23-25 of the Specification). This pressure drop is not to exceed a maximum tolerable value, which is defined as error volume (*see, e.g.*, page 8, lines 23-31 of the Specification). The error volume depends on the individual characteristics of an appropriately constructed pipette and therefore can be predicted (*see, e.g.*, page 8, lines 28-31 of the Specification). This error volume is at least approximately compensated by a tracking part (e.g., a pump piston in claims 1, 21, and 31) of the liquid conveying pump (*see, e.g.*, page 9, lines 1-22 of the Specification).

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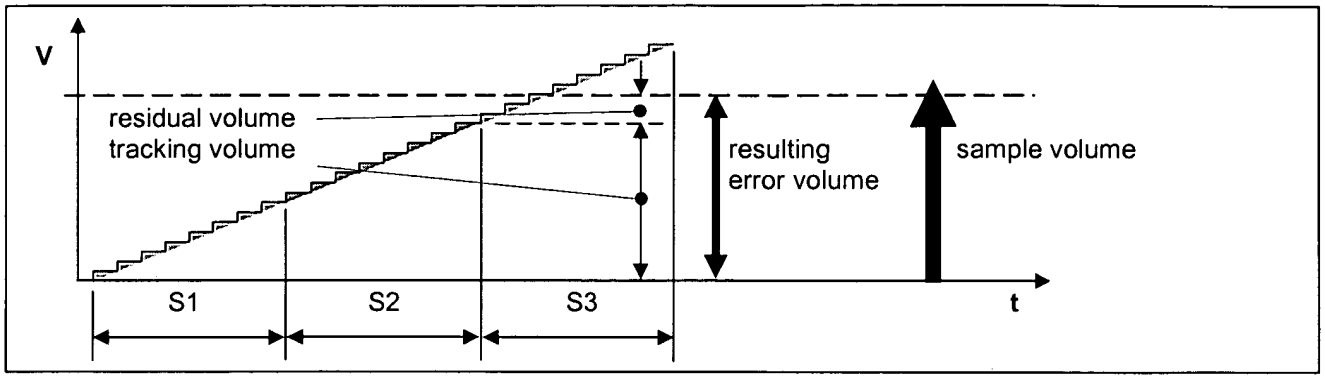
The following diagram is provided to visually illustrate the approximate compensation of the error volume by the tracking part, as disclosed at page 9, lines 1-22 of the Specification:



The volumes (V) of this diagram are depicted based on a time scale (t). Each step series S1, S2, and S3 can comprise a number of partial steps, such as 8 partial steps, for example (*see, e.g.*, page 9, lines 3-8 of the Specification). Using the example from the Specification, each partial step can then have a volume of 2.1 nL (resulting in a volume of 16.8 nL for each step series) (*see, e.g.*, page 9, lines 18-21 of the Specification).

The error volume (vertical bold double arrow in the diagram above) in this example results from the sample volume and the individual characteristics of an appropriately constructed pipette (*see, e.g.*, page 8, lines 28-31 of the Specification). As shown in the diagram, the error volume is equivalent to about 19 partial steps, or approximately 40 nL. A difference between the sample volume and the error volume is evident here and is caused by the elasticity of the tubing that supplies the microejection device with liquid (*see, e.g.*, page 8, lines 25-28 of the Specification).

As described in the example above, Applicants' embodiments track only whole step series (step series S1 and S2 in the example above). Thus, in this example, a volume of 16 x 2.1 nL (33.6 nL) is tracked (*see, e.g.*, page 9, lines 1-22 of the Specification), resulting in a

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tracking volume of 33.6 nL (depicted as the vertical thin double arrow in the diagram above). There thus exists a residual volume of about 6.4 nL or 3 partial steps. This residual volume is borne by the tracking part (for example, the pump piston in claims 1, 21, and 31) of the liquid conveying pump (*see, e.g.*, page 9, lines 1-22 and page 10, lines 12-19 of the Specification). A process control can then store this value and take it into consideration in a following dispensation of samples (*see, e.g.*, page 10, lines 21-25 of the Specification). Occasionally—if the error volume is equal to a multitude of the applied step series volume and therefore is equal to the tracking volume—no residual volume may be left after tracking has been carried out.

Thus, Applicants' claimed embodiments provide economical and simple systems, methods, and products that enable highly reproducible separation of liquid volumes without carrying out pressure measurement in the tubing that supplies the microejection device with liquid. Moreover, the claimed microejection device solely defines and dispenses the sample volumes. Mogensen, in contrast, fails to disclose, teach, or even suggest such limitations, and nowhere in the Office Action does the Examiner point to such disclosures, teachings, or suggestions.

Without addressing the merits of the Examiner's statements regarding claims 2-7 and 22-28 (of which, 4-5, 7, 24, and 26 Applicants have cancelled herein), which are not conceded, Applicants point out that these claims depend from and include all of the limitations of either claim 1 or 21. Therefore, these claims distinguish the cited reference for the same reasons discussed above with regard to claims 1 and 21. It is respectfully requested that the Examiner withdraw his rejection of these claims.

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7. **Claims 1-2 and 4-35 Are Not Anticipated by Pelc et al.**

The Examiner rejected claims 1-2 and 4-35 under Section 102(e) as being anticipated by Pelc et al. U.S. Patent No. 6,203,759. Applicants respectfully traverse the rejections and request favorable reconsideration.

As discussed above, Applicants' claims 1 and 31 include the recitations "to actively define sample volumes . . . using only the microejection device"; "dispense the sample volumes . . . using only the microejection device"; and "actively dispensed only by the microejection device." Similarly, claim 21 includes the recitations "actively defining sample volumes . . . using only the microejection device"; dispensing the sample volumes . . . using only the microejection device"; and "actively dispensed only by the microejection device."

Applicants' claims 1, 21, and 31 thus recite embodiments in which only the microejection device defines and dispenses sample volumes. Pelc, however, fails to disclose, teach, or even suggest such limitations, and nowhere in the Office Action does the Examiner point to such disclosures, teachings, or suggestions.

Without addressing the merits of the Examiner's statements regarding claims 2, 4-20, 22-30, and 32-35 (of which, 4-5, 7, 9, 11, 13-20, 24, 26, 29, and 35 have been cancelled herein), which are not conceded, Applicants point out that these claims depend from and include all of the limitations of either claim 1, 21, or 31. Therefore, these claims distinguish the cited reference for the same reasons discussed above with regard to claims 1, 21, and 31. It is respectfully requested that the Examiner withdraw his rejection of these claims.

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CONCLUSIONS

Applicants believe the present claims to be in condition for allowance, and earnestly request early notification of same. If, for any reason, the Examiner is unable to allow the Application on the basis of this amendment and feels that a telephone conference would help clear up any unresolved matters, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

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